

REMARKS

The Office Action dated September 10, 2002 contained a final rejection of claims 1-20. The Applicants have amended independent claims 1, 11, 14, 16, 18 and 20. Please consider the present amendment with the attached Request for Continued Examination (RCE) under 37 C.F.R. § 1.114. This amendment is in accordance with 37 CFR § 1.114. Reexamination and reconsideration of the application, as amended, are requested.

Record is made of a telephonic interview between Applicants' attorney Edmond A. DeFrank and Examiner Julian Huffman on November 19, 2002. The Office Action of September 10, 2002, and the references of record were discussed. A proposed amendment modifying claims 1, 11 and 14 were discussed during the interview. The above amendments to the claims herein formally reflect the discussion between the Examiner and the Applicants' attorney during the interview.

Claims 1-9 and 14-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al. (U.S. Patent No. 6,219,153) and Winzer et al. (U.S. Patent No. 5,629,578). Also, claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al. and Winzer and further in view of Kato et al. Further, claims 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishinaga et al. in view of Kawanabe et al.

The Applicants respectfully traverse these rejections based on the amendments to the claims and the arguments below.

Claims 1 and 14 include "...a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging."

With regard to claim 11, the Applicants' claimed invention is a method that includes in part "...minimizing air bubble growth rates and bubble sizes within the printhead to enable expulsion of the air bubbles from the printhead without clogging when pigmented ink is used and the temperature variations are controlled."

In contrast, the cited references, in combination, do **not** teach, suggest or disclose all of the Applicant's material limitations. Namely, Ishinaga et al. merely disclose a "...liquid jet recording substrate and the liquid jet recording head and

apparatus using the same wherein the problem arising from the temperature gradient produced in the substrate are solved and wherein temperature detection and temperature control can be performed with high accuracy and with quick response."

However, although the Examiner argued that Ishinaga et al. disclose "two temperature control operations," the Applicants respectfully submit that the Applicants' invention contains material limitations that are not disclosed by Ishinaga et al.. Namely, with regard to claims 1 and 14, clearly Ishinaga et al. do **not** disclose "...a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging."

In addition, with regard to claim 11, Ishinaga et al. do **not** disclose the Applicants' claimed method of "...minimizing air bubble growth rates and bubble sizes within the printhead to enable expulsion of the air bubbles from the printhead without clogging when pigmented ink is used and the temperature variations are controlled."

Further, Kawanabe et al. simply disclose "...a system that chooses between a pigmented ink or a dye ink based on input data." Next, the remaining references add nothing to the cited combination that would render the Applicants' claimed invention obvious.

Clearly, Kawanabe et al., Winzer et al. and Kato et al., in combination with Ishinaga et al. or each taken alone, do **not** teach, suggest or disclose the Applicants' claimed invention. Therefore, a *prima facie* case of obviousness **cannot** be established because the combination of cited references is missing a material limitation of the claimed invention, and thus, the rejections must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital (MPEP 2143.01).

With regard to the dependent claims, because they depend from the above-argued respective independent claims, and they contain additional limitations that are patentably distinguishable over the cited references, these claims are also considered to be patentable (MPEP § 2143.03).

Thus, it is respectfully requested that all of the claims be allowed based on the amendments and arguments. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. Additionally, in an effort to further the prosecution of the subject application, the

Applicants kindly invite the Examiner to telephone the Applicants' attorney at (818) 885-1575 if the Examiner has any questions or concerns. Please note that all correspondence should continue to be directed to:

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Respectfully submitted,
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**VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE CLAIMS**

The following are marked-up versions of claim 1, 11, 14, 16, 18 and 20:

1. (Twice Amended) A printing system receiving input data for printing images on a print media, comprising:

an inkjet printhead having a body and ink ejection devices located on a substrate;

a temperature sensor that senses the temperature of the inkjet printhead; and

a controller that uses the sensed temperature to control temperature variations of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink [to minimize air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging];

a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging.

11. (Twice Amended) A method for printing images with an inkjet printhead on a print media from a printing system having heating elements located on a substrate, the method comprising:

receiving a temperature of the substrate before printing begins;
comparing the temperature with a set point for printing;
initiating the heating elements if the temperature is below a predetermined printing threshold;

turning off the heating elements when the threshold temperature of the substrate has been reached; [and]

controlling temperature variations of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink; and

minimizing air bubble growth rates and bubble sizes within the printhead to enable expulsion of the air bubbles from the printhead without clogging

when pigmented ink is used and the temperature variations are controlled.

14. (Twice Amended) A large array inkjet printing apparatus that prints pigmented ink, comprising:

a monolithic substrate defining a printhead;
a large array of ink ejection elements formed on the substrate; [and]
a nozzle member coupled to the substrate and [including] a controller that controls temperature variations of the printhead to be within a predefined range from a starting point of a print swath to an end point of the print swath and successive print swaths of pigmented ink [to minimize air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging]; and

a bubble reduction device coupled to the controller that minimizes air bubble growth rates and bubble size within the printhead to enable expulsion of the air bubbles from the printhead without clogging.

16. (Twice Amended) The large array inkjet printing apparatus of claim [13] 14, wherein the controller controls an increase in the mean temperature of the substrate through a feedback loop.

18. (Once Amended) The large array inkjet printing apparatus of claim [13] 14, further comprising a programmable feedback loop that increases a baseline temperature of the substrate before printing the pigmented ink.

20. (Twice Amended) The large array inkjet printing apparatus of claim [13] 14, wherein the controller controls temperatures of specific sections of the substrate and a baseline temperature of ink ejection nozzles of the nozzle member associated with the respective sections.